

12. COMPLIANCE TEST EXECUTION....Continued

D.5 RESTRAINT SETUP

This section describes the procedure to be followed for installing the dummy in the child restraint system and for installing the child restraint system on the standard seat for dynamic impact testing.

RESTRAINT INSTALLATION

Activate the built-in child restraint or attach the add-on child restraint to the seat assembly as described below:

TEST CONFIGURATION I

In the case of each add-on child restraint system other than a belt-positioning seat, a child harness, a backless child restraint system with a top anchorage strap, or a restraint designed for use by physically handicapped children, install the add-on child restraint system at the center seating position of the standard seat assembly in accordance with the manufacturer's instructions provided with the system, except that the child restraint is secured to the standard seat assembly using only a Type I lap belt.

A child harness, a backless child restraint system with a top anchorage strap, or a restraint designed for use by physically handicapped children shall be installed at the center seating position of the standard seat assembly in accordance with the manufacturer's instructions provided with the system.

An add-on belt-positioning seat shall be installed at either outboard seating position of the standard seat assembly in accordance with the manufacturer's instructions provided with the system, except that it is secured to the standard seat assembly using only a Type II lap and shoulder belt.

For add-on belt-positioning seats the standard seat assembly seat back shall be fixed in place by any suitable means that prevents movement of the seat back during the dynamic test.

In the case of each built-in child restraint system, activate the restraint in the specific vehicle shell or the specific vehicle, in accordance with the manufacturer's instructions provided.

12. COMPLIANCE TEST EXECUTION....Continued

TEST CONFIGURATION II

In the case of each add-on child restraint system which is equipped with a fixed or movable surface or a backless child restraint system with a top anchorage strap, install the add-on child restraint system at the center seating position of the standard seat assembly using only the Type I lap belt to secure the system to the standard seat assembly.

In the case of each built-in child restraint system, which is equipped with a fixed or movable surface or a built-in booster seat with a top anchorage strap, activate the system in the specific vehicle shell or the specific vehicle in accordance with the manufacturer's instructions provided.

D.5.1 RESTRAINTS OTHER THAN CAR BEDS

NEWBORN DUMMY AND NINE-MONTH-OLD DUMMY (S213, S10.2.1)

Position the test dummy according to the instruction for child positioning that the manufacturer provided with the system.

Prior to placing the nine-month-old test dummy in the child restraint system, place the dummy in the supine position on a horizontal surface. While placing a hand on the center of the torso to prevent movement of the dummy torso, rotate the dummy legs upward by lifting the feet 90 degrees. Slowly release the legs but do not return them to the flat surface.

When testing forward-facing child restraint systems, holding the nine-month-old test dummy torso upright until it contacts the system's design seating surface, place the nine-month-old test dummy in the seated position within the system with the midsagittal plane of the dummy head:

- (1) Coincident with the center SORL of the standard seating assembly, in the case of the add-on child restraint system, or
- (2) Vertical and parallel to the longitudinal centerline of the specific vehicle shell or the specific vehicle, in the case of a built-in child restraint system.

When testing rear-facing child restraint system, place the newborn or nine-month-old dummy in the child restraint system so that the back of the dummy torso contacts the back support surface of the system. For a child restraint system, which is equipped with a fixed or movable surface, which is being tested under the conditions of test configuration II, do not attach any of the child restraint belts unless they are an integral part of the fixed or movable surface. For all other child restraint systems and for a child restraint system with a fixed or

12. COMPLIANCE TEST EXECUTION....Continued

movable surface, which is being tested under the conditions of Test Configuration I, attach all appropriate child restraint belts and tighten them as specified in S6.1.2. Attach all appropriate vehicle belts and tighten them as specified in S6.1.2. Position each movable surface in accordance with the instruction that the manufacturer provided. If the dummy's head does not remain in the proper position, it shall be taped against the front of the seat back surface of the system by means of a single thickness of 6 mm (1/4 inch) wide paper masking tape placed across the center of the dummy's face.

When testing forward-facing child restraint systems, extend the arms of the nine-month-old test dummy as far as possible in the upward vertical direction. Extend the legs of the nine-month-old dummy as far as possible in the forward horizontal direction, with the dummy feet perpendicular to the centerline of the lower legs. Using a flat surface with an area of 2580 square mm (4 square in), apply a force of 178 N (40 lbs), perpendicular to:

- (1) The plane of the back of the standard seat assembly, in the case of an add-on system, or
- (2) The back of the vehicle seat in the specific vehicle shell or the specific vehicle, in the case of a built-in system.

Apply the force first against the dummy crotch and then at the dummy thorax in the midsagittal plane of the dummy.

For a child restraint system with a fixed or movable surface, which is being tested under the conditions of test configuration II, do not attach any of the child restraint belts unless they are an integral part of the fixed or movable surface.

For all other child restraint systems and for a child restraint system with a fixed or movable surface, which is being tested under the conditions of test configuration I, attach all appropriate child restraint belts and tighten them as specified in S6.1.2. Attach all appropriate vehicle belts and tighten them as specified in S6.1.2. Position each movable surface in accordance with the instructions that the manufacturer provided.

When testing rear-facing child restraints, position the newborn and nine-month-old dummy arms and legs vertically upwards and then rotate each arm and leg downward toward the dummy's lower body until the arm contacts a surface of the child restraint system or the standard seat assembly in the case of an add-on child restraint system, or the specific vehicle shell or the specific vehicle, in the case of a built-in child restraint system. Ensure that no arm is restrained from movement in other than the downward direction, by any part of the system or the belts used to anchor the system to the standard seat assembly, the specific shell, or the specific vehicle.

12. COMPLIANCE TEST EXECUTION....Continued

THREE-YEAR-OLD AND SIX-YEAR-OLD DUMMY (S213, S10.2.2)

Position the test dummy according to the instructions for child positioning that the restraint manufacturer provided with the system, while conforming to the following:

- (1) Holding the test dummy torso upright until it contacts the system's design seating surface, place the test dummy in the seated position within the system with the midsagittal plane of the test dummy head—
 - (A) Coincident with the center SORL of the standard seating assembly, in the case of the add-on child restraint system, or
 - (B) Vertical and parallel to the longitudinal centerline of the specific vehicle, in the case of a built-in child restraint system.
- (2) Extend the arms of the test dummy as far as possible in the upward vertical direction. Extend the legs of the dummy as far as possible in the forward horizontal direction, with the dummy feet perpendicular to the centerline of the lower legs.
- (3) Using a flat square surface with an area of 2580 square millimeters (4 square inches), apply a force of 178 N (40 lbs), perpendicular to:
 - (A) The plane of the back of the standard seat assembly, in the case of an add-on system, or
 - (B) The back of the vehicle seat in the specific vehicle shell or the specific vehicle, in the case of a built-in system, first against the dummy crotch and then at the dummy thorax in the midsagittal plane of the dummy. For a child restraint system with a fixed or movable surface, which is being tested under the conditions of test configuration II, do not attach any of the child restraint belts unless they are an integral part of the fixed or movable surface. For all other child restraint systems and for a child restraint system with a fixed or movable surface, which is being tested under the conditions of test configuration I, attach all appropriate child restraint belts and tighten them as specified in S6.1.2. Attach all appropriate vehicle belts and tighten them as specified in S6.1.2. Position each movable surface in accordance with the instructions that the manufacturer provided.

12. COMPLIANCE TEST EXECUTION....Continued

D.5.2 CAR BEDS (S213, S10.1)

Place the test dummy in the car bed in the supine position with its midsagittal plane perpendicular to the center SORL of the standard seat assembly, in the case of an add-on car bed, or perpendicular to the longitudinal axis of the specific vehicle shell or the specific vehicle, in the case of a built-in car bed. Position the dummy within the car bed in accordance with the instructions for child position that the bed manufacturer provided with the bed.

D.5.3 BELT TENSION

CHILD RESTRAINT PELVIC AND SHOULDER BELTS (S213, S6.1.2)

Place the appropriate size dummy in the child restraint for testing. Tighten the child restraint belts until a 9 N (2 lbs.) force applied to the webbing at the top of each dummy shoulder and to the pelvic webbing 50 mm (2 inches) on either side of the torso midsagittal plane pulls the webbing 7 mm (1/3 inch) from the dummy.

Use the webbing tension pull device shown in Figure 19 or an aluminum rod of sufficient diameter to perform this evaluation. Measure the height of the shoulder slots used, relative to the appropriate dummy shoulder height. In addition, measure the height of the top of the buckle assembly or shield relative to the C_G point of the appropriate size dummy used for each test. Record this data in the laboratory raw data notebook.

CHILD RESTRAINT ATTACHMENT BELTS (S213, S6.1.2)

Tighten all belts used to restrain an add-on child restraint system to the standard seat assembly or built-in restraint after installation of the appropriate size dummy. It is recommended that a belt-tensioning gage be used to apply the initial tension. For all Type I and the lap portion of Type II belt systems, apply the initial tension at the junction of the seat back and seat bottom on the standard seat assembly. For the shoulder portion of all Type II belt systems, apply the initial tension at a point close to the D-ring between the belt anchorage and the D-ring. For any provided additional anchorage belt systems, apply the initial tension at the closest point to the child restraint system that permits installation of the gage on the belt system. After the initial tension is applied, a load cell system shall be used to monitor the tension. The load cells shall be positioned on the belt system close to the back of the standard seat assembly, between the belt anchorage and the standard seat assembly.

Tighten all Type I belt systems and any provided additional anchorage belt (tether), that are used to attach an add-on child restraint to the standard seat assembly to a tension of not less than 53.5 N (12 lbs.) and not more than 67 N (15 lbs.), as measured by a load cell used on the webbing portion of the belt.

12. COMPLIANCE TEST EXECUTION....Continued

Tighten the lap portion of Type II belt systems used to attach an add-on child restraint to the standard seat assembly to a tension of not less than 53.5 N (12 lbs.) and not more than 67 N (15 lbs.), as measured by a load cell used on the webbing portion of the belt.

Tighten the shoulder portion of Type II belt system used to directly restrain the dummy in add-on and built-in child restraint systems to a tension of not less than 9 N (2 lbs.) and not more than 18 N (4 lbs.), as measured by a load cell used on the webbing portion of the belt.

NOTE: There are no tension requirements for an Emergency Locking Retractor system on a built-in restraint system.

12. COMPLIANCE TEST EXECUTION....Continued

WEBBING TENSION PULL DEVICE

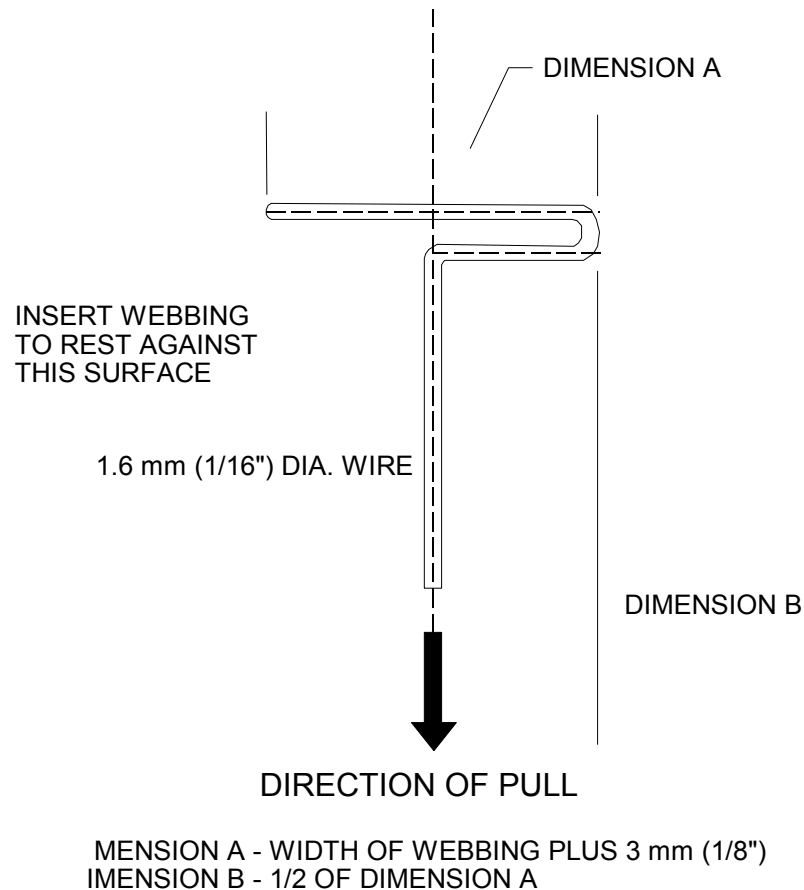


FIGURE 19

D.5.4 RESTRAINT TARGETING

Rear-facing restraints, depending on their design, require the use of targets visible to the high-speed movie camera to allow determination of compliance with occupant excursion and back support angle requirements. A target identifying the forward-most and top-most point on the restraint is necessary if that point is not visible from the side.

12. COMPLIANCE TEST EXECUTION....Continued

If a surface parallel to the back support surface is not externally visible, targets identifying that surface may be necessary for determining its maximum deviation from vertical. An alternate method for defining the seat back plane is to determine the angular relationship between an externally visible surface and the actual back support surface prior to the Dynamic Impact Test.

If the back support surface is curved, a target is necessary that identifies the top of the dummy's shoulder, defined in this procedure, on the surface to be observed. The angle determination will then be made using a tangent to the surface at the "shoulder height" point.

Do not modify the restraint in any manner that will affect its structure or performance to achieve the targeting requirement. The use of adhesive-backed paper or fabric photographic targets is recommended for this application.

D.5.5 PREIMPACT BUCKLE RELEASE TEST (S213, S5.4.3.5, S6.2)

Before conducting the dynamic testing of either the built-in or add-on child restraint system, remove the buckle from the restraint system and place on a hard, flat horizontal surface. Each belt end of the buckle shall be pre-loaded in the following manner. The anchor end of the buckle shall be loaded with a 9 N (2 lbs.) force in the direction away from the buckle. In the case of buckles designed to secure a single latch plate, the belt latch plate end of the buckle shall be pre-loaded with a 9 N (2 lbs.) force in the direction away from the buckle. In the case of buckles designed to secure two or more latch plates, the belt latch plate ends of the buckle shall be loaded equally so that the total load is 9 N (2 lbs.), in the direction away from the buckle. For pushbutton-release buckles, the release force shall be applied by a conical surface (cone angle not exceeding 90 degrees). For pushbutton-release mechanisms with a fixed edge (referred to in Figure 20 as "hinged button"), the release force shall be applied at the centerline of the button, 3mm away from the movable edge directly opposite the fixed edge, and in the direction that produces maximum releasing effect. For pushbutton-release mechanisms with no fixed edge (referred to in Figure 20 as "floating button"), the release force shall be applied at the center of the release mechanism in the direction that produces the maximum releasing effect. For all other buckle release mechanisms, the force shall be applied on the centerline of the buckle lever or finger tab in the direction that produces the maximum releasing effect. Measure the force required to release the buckle. Figure 20 illustrates the loading for the different buckles and the point where the release force should be applied, and Figure 22 illustrates the conical surface used to apply the release force to pushbutton-release buckles.

12. COMPLIANCE TEST EXECUTION....Continued

For child restraint systems that have buckles integral to the seat, the entire seat may be placed on its back on a flat surface with the 9 N (2 lbs.) force applied to the belts away from the buckle as described above, and the release force of the buckle determined with the appropriate release gauge. For buckle assemblies that are attached to a crotch belt where the crotch belt cannot be removed, the buckle assembly can be hand held while the test gauge release force is applied. Place the restraint on its back, following the procedure above keep the buckle assembly in the orientation described and apply the force sufficient to release the buckle. Record the results in the appropriate data sheets.

D.6 IMPACT TEST (S213, S6.1.2.5)

Photograph the restraint setup to document the final pretest configuration. Include this documentation with the appropriate Data Sheet.

Before conducting the Dynamic Impact Test, ensure that:

- (1) The restraint system and dummy are properly installed on the standard seat, and all belts are adjusted and tensioned as required.
- (2) Restraint and dummy targeting required to measure performance are properly installed.
- (3) All required calibrations of instrumentation, transducers, and high-speed movie/video camera field are completed and recorded.
- (4) All parameters relating to the required impact severity and velocity have been correctly set.
- (5) The environmental requirements are met.

When all pretest requirements are met, conduct the Dynamic Impact Test.

Immediately after the Dynamic Impact Test, photograph the restraint and dummy in their final posttest positions and configurations on the standard seat or vehicle. Include this documentation with the appropriate Data Sheet. Provide, in addition, a plot of the sled/vehicle acceleration-time history for the test, showing its relationship to the acceleration-function envelope. Indicate on the appropriate Data Sheet the actual sled/vehicle velocity change for the test and the cumulative velocity change associated with acceleration deviations below the acceleration-function envelope. In the event of a noncompliance, a posttest calibration check of critically sensitive test equipment and instrumentation shall be required at the discretion of the COTR.

12. COMPLIANCE TEST EXECUTION....Continued

PREIMPACT BUCKLE RELEASE FORCE TEST SETUP

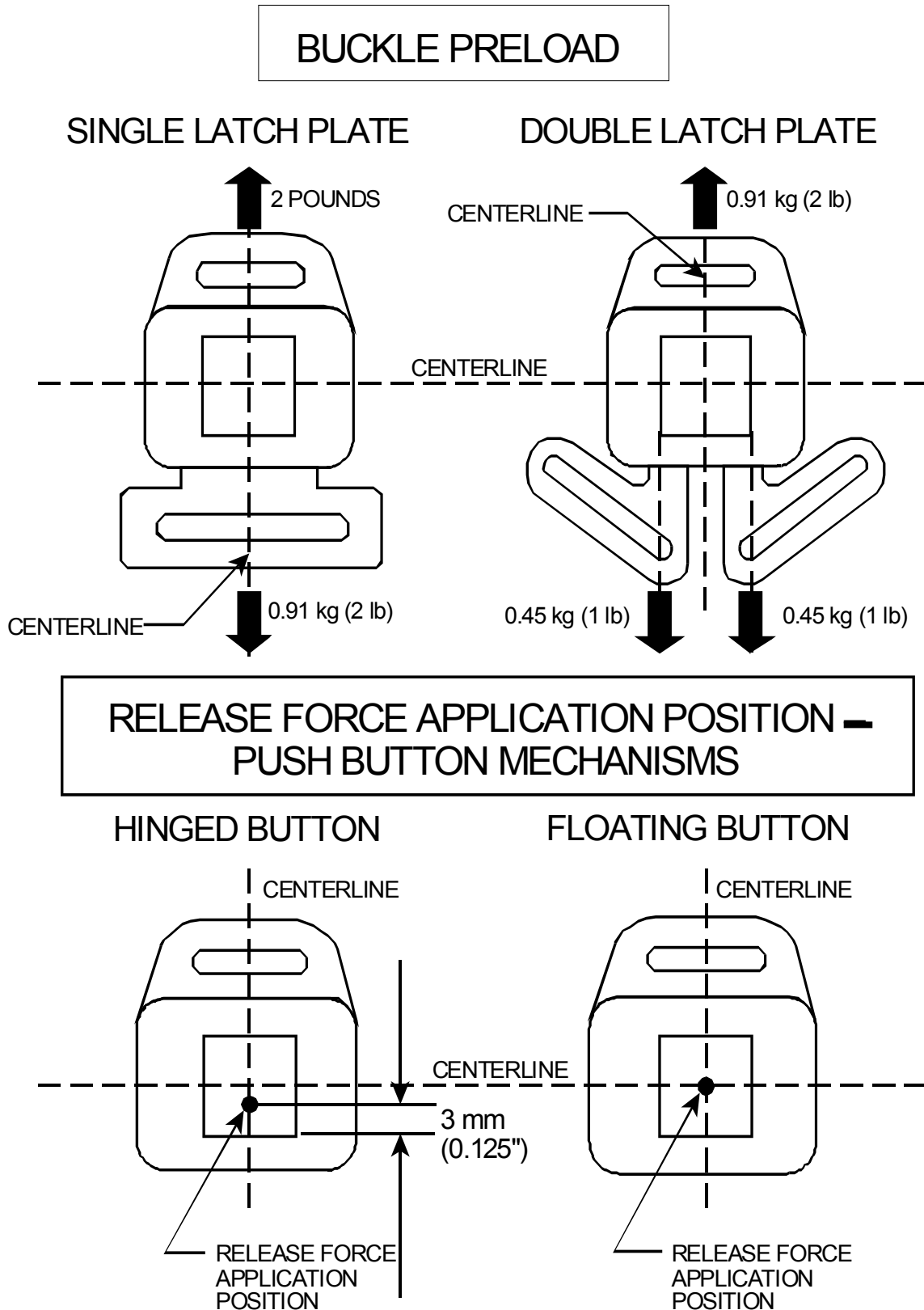


FIGURE 20

12. COMPLIANCE TEST EXECUTION....Continued

D.7 PERFORMANCE REQUIREMENTS (S213, S5.1)

D.7.1 POST IMPACT BUCKLE RELEASE TEST (S213, S5.4.3.5, S6.2)

After completion of the testing specified in S6.1 and before the buckle is unlatched, tie a self-adjusting sling to each wrist and ankle of the test dummy in the manner illustrated in Figure 21 without disturbing the belt dummy and the child restraint system.

Pull the sling tied to the dummy restrained in the child restraint system and apply a force whose magnitude is: 50 N (11 lbs.) for a system tested with a newborn dummy; 90 N (20 lbs.) for a system tested with a nine-month-old dummy; 200 N (45 lbs.) for a system tested with a three-year-old dummy; or 270 N (61 lbs.) for a system tested with a six-year-old dummy. The force is applied in the manner illustrated in Figure 21 and as follows:

- (A) Add-on Child Restraints. For an add-on child restraint other than a car bed, apply the specified force by pulling the sling horizontally and parallel to the SORL of the standard seat assembly. For a car bed, apply the force by pulling the sling vertically.
- (B) Built-in child Restraints. For a built-in child restraint other than a car bed, apply the force by pulling the sling parallel to the longitudinal centerline of the specific vehicle shell or the specific vehicle. In the case of a car bed, apply the force by pulling the sling vertically.

While applying the force specified and using the device shown in Figure 22 for pushbutton-release buckles, apply the release force in the manner and location specified in S6.2.1, for that type of buckle. Measure the force required releasing the buckle and record in the appropriate data sheet.

12. COMPLIANCE TEST EXECUTION....Continued

BUCKLE RELEASE TEST CONFIGURATION

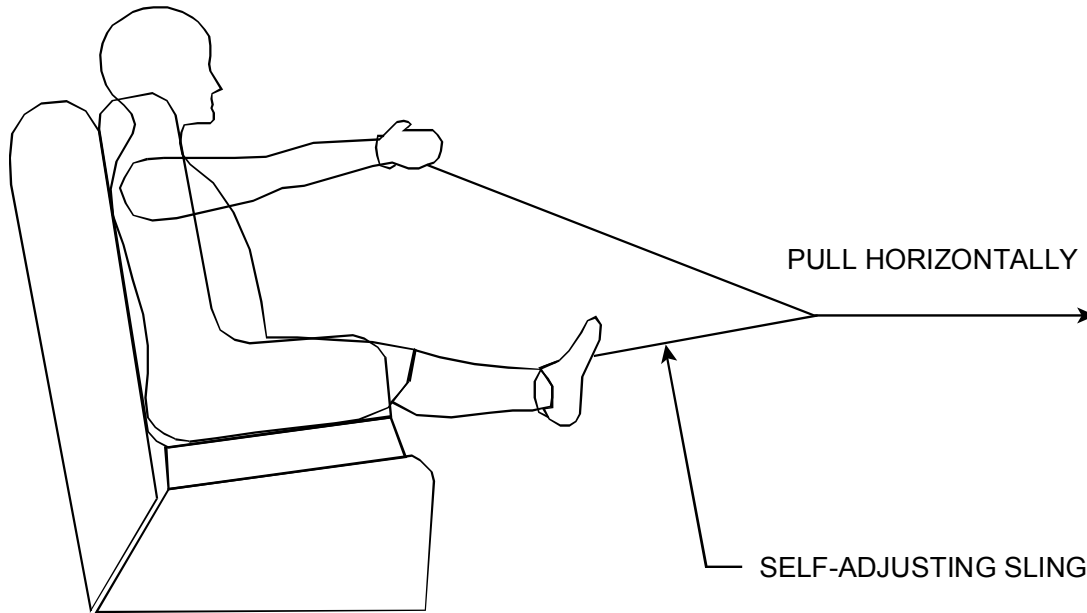


FIGURE 21

D.7.2 RESTRAINT SYSTEM INTEGRITY (S213, S5.1.1)

After the Dynamic Impact Test, the child restraint system shall:

- (1) Exhibit no complete separation of any load bearing structural element and no partial separation exposing either surfaces with a radius of less than 6 mm (0.25 inch) or surfaces with protrusions greater than 10 mm (0.375 inch) above the immediate adjacent surrounding contactable surface of any structural element of the system.
- (2) If adjustable to different positions, remain in the same adjustment position during the testing as it was immediately before the testing except as noted below:
 - (A) A rear-facing child restraint system may have a means for repositioning the seating surface of the system that allows the system's occupant to move from a reclined position to an upright position and back to a reclined position during testing.

12. COMPLIANCE TEST EXECUTION....Continued

- (B) No opening that is exposed and is larger than 6 mm (1/4 inch) before the testing shall become smaller during the testing as a result of the movement of the seating surface relative to the restraint system as a whole.
- (3) If a forward-facing child restraint system, not allow the angle between the system's back support surface for the child and the system's seating surface to be less than 45 degrees at the completion of the test.

Observe, measure, and record the results, including maximum protrusion values, on the appropriate Data Sheet.

RELEASE FORCE APPLICATION DEVICE PUSH BUTTON RELEASE BUCKLES

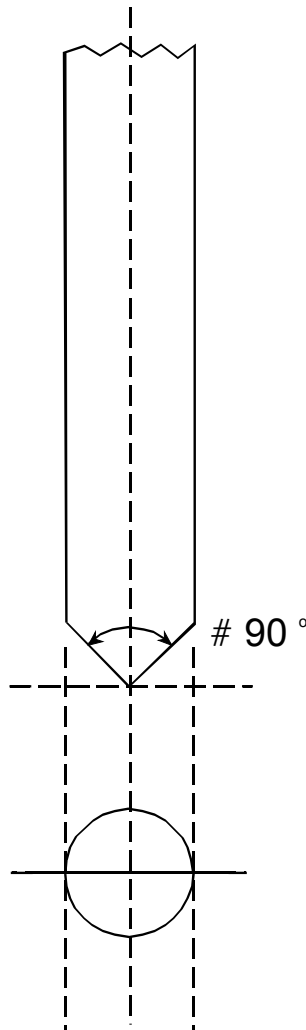


FIGURE 22

12. COMPLIANCE TEST EXECUTION....Continued

D.7.3 INJURY CRITERIA (S213, S5.1.2)

Restraints tested with the three-year-old or the six-year-old dummy shall be evaluated for injury potential. For compliance, the child restraint system shall:

- (1) Limit the resultant acceleration at the location of the accelerometer mounted in the test dummy head as specified in 49 CFR, Part 572, such that the expression:

$$HIC = \left[\frac{1}{t_2 - t_1} \int_{t_1}^{t_2} a \, dt \right]^{2.5} (t_2 - t_1)$$

shall not exceed 1,000, where a is the resultant acceleration expressed as a multiple of g (the acceleration of gravity), and t_1 and t_2 , are any two moments during the impact.

- (2) Limit the resultant acceleration at the location of the accelerometer mounted in the test dummy upper thorax as specified in 49 CFR, Part 572, to not more than 60 g's except for intervals whose cumulative duration is not more than 3 milliseconds.

Record the results on the appropriate Data Sheet.

D.7.4 OCCUPANT EXCURSION (S213, S5.1.3, S5.1.4, S5.2.1.1(C))

By analysis of the high-speed movie/video of the Dynamic Impact Test, or from an equivalent method approved by the COTR, the dummy excursion must be within the following limits during the impact test.

CHILD RESTRAINT SYSTEMS OTHER THAN REAR-FACING ONES AND CAR BEDS

Each child restraint system, other than a rear-facing child restraint system or a car bed, shall retain the test dummy's torso within the system.

FORWARD-FACING RESTRAINTS (S213, S5.1.3.1, S5.2.1.1(C))

- (A) In the case of an add-on child restraint system, no portion of the test dummy's head shall pass through a vertical, transverse plane that is 813 mm (32 inches) forward of point Z on the standard seat assembly, measured along the center SORL (as illustrated in Figure 16), and neither knee pivot point shall pass through a vertical, transverse plane that is 915 mm (36 inches) forward of point Z on the standard seat assembly, measured along the center SORL.

12. COMPLIANCE TEST EXECUTION....Continued

- (B) In the case of a built-in child restraint system, neither knee pivot point shall, at any time during the dynamic test, pass through a vertical, transverse plane that is 305 mm (12 inches) forward of the initial pre-test position of the respective knee pivot point, measured along a horizontal line that passes through the knee pivot point and is parallel to the vertical plane that passes through the vehicle's longitudinal centerline.

Record the results of the film analysis, including maximum excursions and angles observed, on the appropriate Data Sheet.

REAR-FACING RESTRAINTS (S213, S5.1.3.2, S5.1.4, S5.2.1.1(C))

In the case of each rear-facing child restraint system, all portions of the test dummy's torso shall be retained within the system and neither of the target points on either side of the dummy's head and on the transverse axis passing through the center of mass of the dummy's head and perpendicular to the head's midsagittal plane, shall pass through the transverse orthogonal planes whose intersection contains the forward-most and top-most points on the child restraint system surfaces (illustrated in Figure 23).

Record the results of the film analysis, including maximum angles observed, on the appropriate Data Sheet.

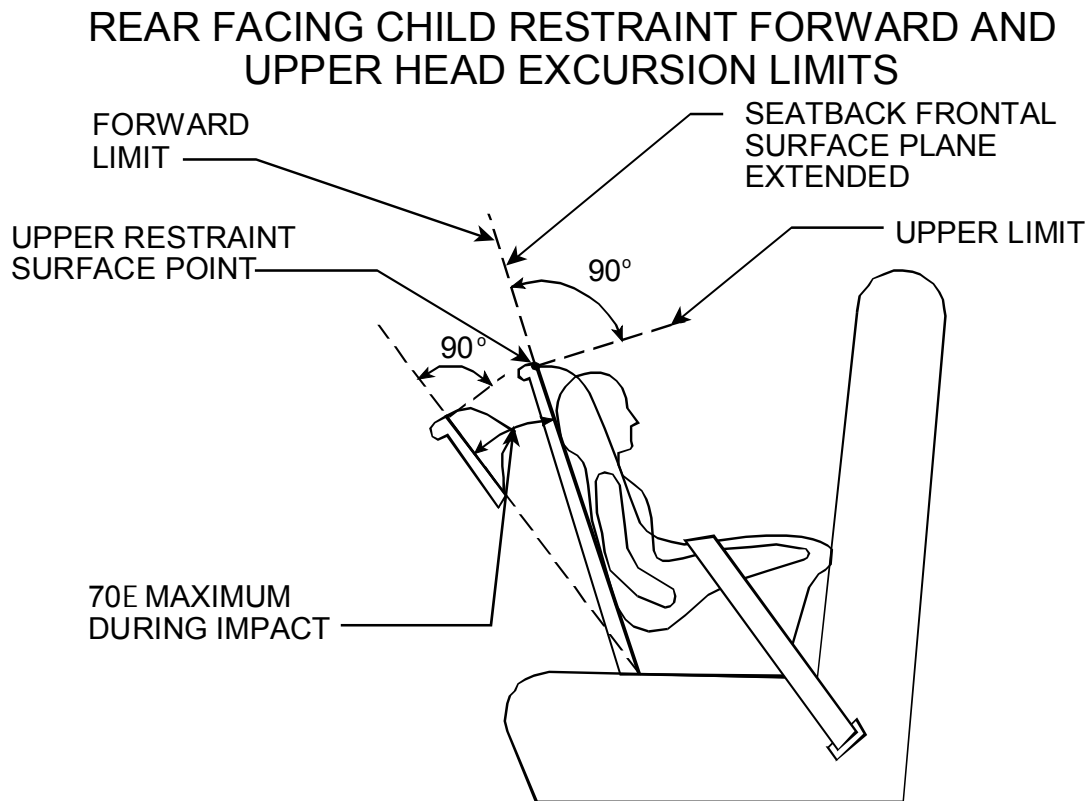
CAR BEDS (S213, S5.1.3.3)

In the case of car beds, all portions of the test dummy's head and torso shall be retained within the confines of the car bed. Record the results on the appropriate Data Sheet.

BACK SUPPORT ANGLE (S213, S5.1.4)

When a rear-facing child restraint system is tested in accordance with S6.1, the angle between the system's back support surface for the child and the vertical shall not exceed 70 degrees. Record the results on the appropriate Data Sheet.

12. COMPLIANCE TEST EXECUTION....Continued



NOTE: Limits illustrated move during dynamic testing

FIGURE 23

E. TESTING FOR AIRCRAFT USE (S213, S8)

Test a child restraint system manufactured for use in aircraft according to the additional procedures following:

E.1 INSTALLATION INSTRUCTIONS (S213, S8.1)

Review the manufacturer's printed instructions and install the child restraint system accordingly. Verify the requirements shown below:

Each child restraint system manufactured for use in aircraft shall be accompanied by printed instructions in the English language that provide a step-by-step procedure, including diagrams, for installing the system in the aircraft passenger seats, securing the system to the seat, positioning a child in the system when it is installed in aircraft, and adjusting the system to fit the child.

Record the results in the appropriate Data Sheets.

12. COMPLIANCE TEST EXECUTION....Continued

E.2 INVERSION TEST

This test uses a representative aircraft passenger seat assembly and a child restraint system manufactured for use in aircraft.

E.2.1 TEST DEVICE (S213, S8.2.1)

Position and adjust a representative aircraft passenger seat shall be positioned and adjusted so that its horizontal and vertical orientation and its seat back angle are the same as shown in Figure 24 on the next page.

"A" represents a 51 mm (2 inch) to 76 mm (3 inch) thick polyurethane foam pad, 0.68 kg (1.5 pounds) to 0.91 kg (2.0 pounds) per cubic foot density, over 0.51 mm (0.020 inch) thick aluminum pan, and covered by 340 grams (12 ounce) to 397 grams (14 ounce) marine canvas. The sheet aluminum pan is 508 mm (20 inches) wide and supported on each side by a rigid structure. The seat back is a rectangular frame covered with the aluminum sheet and weighing between 6 kg (14 pounds) and 7 kg (15 pounds), with a center of mass 330 mm (13 inches) to 406 mm (16 inches) above the seat pivot axis. The mass moment of inertia of the seat back about the seat pivot axis is between 1.378 and 1.553 kg-m² (195 and 220 ounce-inch-second²). The seat back is free to fold forward about the pivot, but a stop prevents rearward motion. The passenger safety belt anchor points are spaced 533 mm (21 inches) to 559 mm (22 inches) apart and are located in line with the seat pivot axis.

E.2.2 RESTRAINT SYSTEM INSTALLATION IN AIRCRAFT PASSENGER SEAT (S213, S8.2.2)

Attach the child restraint system to the representative aircraft passenger seat using, at the manufacturer's options, any Federal Aviation Administration approved aircraft safety belt, according to the restraint manufacturers instructions for attaching the restraint to an aircraft seat. No supplementary anchorage belts or tether straps may be attached; however, Federal Aviation Administration approved safety belt extensions may be used.

E.2.3 DUMMY SELECTION (S213, S8.2.3)

Place the appropriate size dummy in the child restraint as recommended by the manufacturers instructions. Indicate the dummy used on the appropriate Data Sheet.

12. COMPLIANCE TEST EXECUTION....Continued

SIMULATED AIRCRAFT PASSENGER SEAT

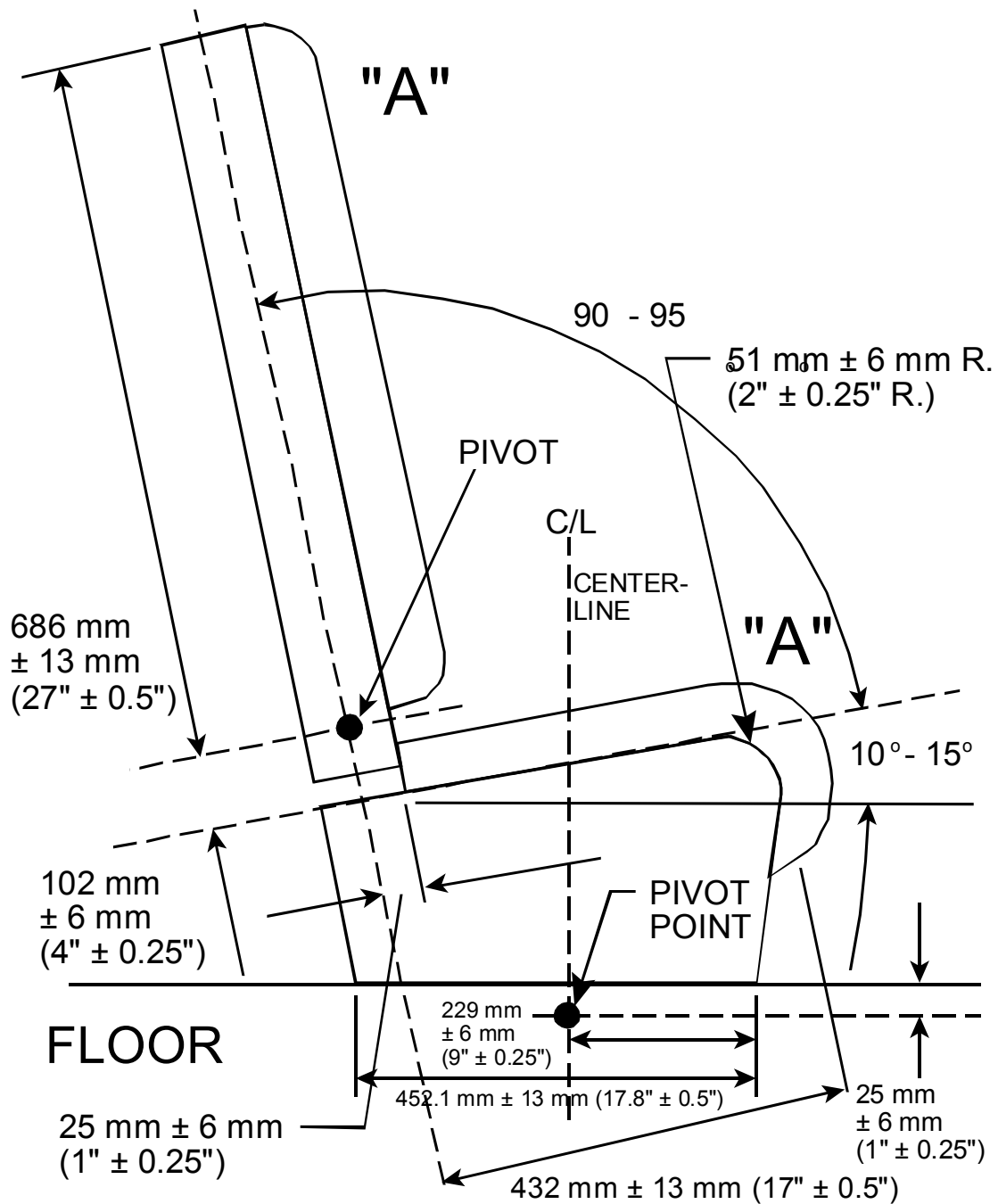


FIGURE 24

12. COMPLIANCE TEST EXECUTION....Continued

E.2.4 BELT TENSION (S213, S8.2.4)

Refer to Section D.5.3 of this test procedure for adjusting shoulder and pelvic belts in the restraint system that directly rests on the dummy.

E.2.5 FORWARD ROTATION TEST (S213, S8.2.5)

Rotate the combination of representative aircraft passenger seat, child restraint, and test dummy forward around a horizontal axis which is contained in the median transverse vertical plane of the seating surface portion of the aircraft seat and is located 25.4 mm (1 in) below the bottom of the seat frame, at a speed of 35 degrees to 45 degrees per second, to an angle of 180 degrees. The rotation shall be stopped when it reaches that angle and the seat shall be held in this position for three seconds. The child restraint shall not fall out of the aircraft safety belt, nor shall the test dummy fall out of the child restraint at any time during the rotation or the three second period. The specified rate of rotation shall be attained in not less than one-half second, and not more than one second, and the rotating combination shall be brought to a stop in not less than one half second and not more than one second.

Indicate the results on the appropriate Data Sheet.

E.2.6 SIDEWAYS ROTATION TEST (S213, S8.2.6)

Rotate the combination of the representative aircraft passenger seat, child restraint, and test dummy sideways around a horizontal axis which is contained in the median longitudinal vertical plane of the seating surface portion of the aircraft seat and is located 25.4 mm (1 in) below the bottom of the seat frame, at a speed of 35 degrees to 45 degrees per second, to an angle of 180 degrees. The rotation shall be stopped when it reaches that angle and the seat shall be held in this position for three seconds. The child restraint shall not fall out of the aircraft safety belt, nor shall the test dummy fall out of the child restraint at any time during the rotation or the three second period. The specified rate of rotation shall be attained in not less than one half second and not more than one second, and the rotating combination shall be brought to a stop in not less than one half second and not more than one second. Indicate the results on the appropriate Data Sheet.

13. POST TEST REQUIREMENTS

The contractor shall re-verify all instrumentation and checks data sheets and photographs. Make sure data are recorded in all applicable data blocks on every compliance test Data Sheet.

14. REPORTS

14.1 MONTHLY STATUS REPORTS

The contractor shall submit a monthly Test Status Report and a Equipment Status Report to the COTR. The Equipment Status Report shall be submitted until all child restraint systems are disposed of. Samples of the required Monthly Status Reports are contained in the report forms section.

14.2 APPARENT TEST FAILURE

Any indication of a test failure shall be communicated by telephone to the COTR within 24 hours with written notification mailed within 48 hours (Saturdays and Sundays excluded). A Notice of Test Failure (see report forms section) with a copy of the particular compliance test data sheet(s) and preliminary data plot(s) shall be included. In the event of a test failure, a post test calibration check of some critically sensitive test equipment and instrumentation may be required for verification of accuracy. The necessity for the calibration shall be at the COTR's discretion and shall be performed without additional costs to the OVSC.

14.3 FINAL TEST REPORTS

14.3.1 COPIES

In the case of a test failure, **SEVEN** copies of the Final Test Report shall be submitted to the COTR for acceptance within three weeks of test completion. The Final Test Report format to be used by all contractors can be found in the "Report Section".

Where there has been no indication of a test failure, **THREE** copies of each Final Test Report shall be submitted to the COTR within three weeks of test completion. Payment of contractor's invoices for completed compliance tests may be withheld until the Final Test Report is accepted by the COTR. Contractors are requested to NOT submit invoices before the COTR is provided copies of the Final Test Report.

Contractors are required to submit the first Final Test Report in draft form within two weeks after the compliance test is conducted. The contractor and the COTR will then be able to discuss the details of both test conduct and report content early in the compliance test program.

14. REPORTS....Continued

Contractors are required to PROOF READ all Final Test Reports before submittal to the COTR. The OVSC will not act as a report quality control office for contractors. Reports containing a significant number of errors will be returned to the contractor for correction, and a "hold" will be placed on invoice payment for the particular test.

14.3.2 REQUIREMENTS

The Final Test Report, associated documentation (including photographs) is relied upon as the chronicle of the compliance test. The Final Test Report will be released to the public domain after review and acceptance by the COTR. For these reasons, each final report must be a complete document capable of standing by itself.

The contractor should use **detailed** descriptions of all compliance test events. Any events that are not directly associated with the standard but are of technical interest should also be included. The contractor should include as much **detail** as possible in the report.

In addition, one (1) data disk containing dynamic sled test data shall be submitted. Data contained on the disk shall be arranged such that it complies with the "NHTSA Component Data Reference Guide, Vol. 3" and is in a well-organized and readily understandable format.

Instructions for the preparation of the first three pages of the final test report are provided for the purpose of standardization.

14.3.3 FIRST THREE PAGES

A. FRONT COVER

A heavy paperback cover (or transparency) shall be provided for the protection of the final report. The information required on the cover is as follows:

(1) FINAL REPORT NUMBER such as 213-ABC-9X-001, where –

213	is the FMVSS tested
ABC	are the initials for the laboratory
9X	is the Fiscal Year of the test program (or 0X after 1999)
001	is the Group Number (001 for the 1st test, 002 for the 2nd test, etc.)

14. REPORTS....Continued

- (2) Final Report Title And Subtitle such as

SAFETY COMPLIANCE TESTING FOR FMVSS 213

Child Restraint Systems

Child Safety Corporation

199X CSC Super Safe

Model No. CSC 9X123, P/N 12345678

- (3) Contractor's Name and Address such as

COMPLIANCE TESTING LABORATORIES, INC.

4335 West Dearborn Street

Detroit, Michigan 48090-1234

NOTE: DOT SYMBOL WILL BE PLACED BETWEEN ITEMS (3) AND (4)

- (4) Date of Final Report completion

- (5) The words "FINAL REPORT"

- (6) The sponsoring agency's name and address as follows

U. S. DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

Safety Assurance

Office of Vehicle Safety Compliance

400 Seventh Street, SW

Room 6115 (NSA-30)

Washington, DC 20590

14. REPORTS....Continued**B. FIRST PAGE AFTER FRONT COVER**

A disclaimer statement and an acceptance signature block for the COTR shall be provided as follows:

This publication is distributed by the U. S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By: _____

Approved By: _____

Approval Date: _____

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: _____

14. REPORTS....Continued**C. SECOND PAGE AFTER FRONT COVER**

A completed Technical Report Documentation Page (Form DOT F1700.7) shall be completed for those items that are applicable with the other spaces left blank. Sample data for the applicable block numbers of the title page follows.

Block No. 1 -- REPORT NUMBER

213-ABC-9X-001

Block No. 2 -- GOVERNMENT ACCESSION NUMBER

Leave blank

Block No. 3 -- RECIPIENT'S CATALOG NUMBER

Leave blank

Block No. 4 -- TITLE AND SUBTITLE

Final Report of FMVSS 213 compliance testing of CSC Super Safe Child Restraint System

Block No. 5 -- REPORT DATE

March 1, 199X (or 200X)

Block No. 6 -- PERFORMING ORGANIZATION CODE

ABC

Block No. 7 -- AUTHOR(S)

John Smith, Project Manager
Bill Doe, Project Engineer

Block No. 8 -- PERFORMING ORGANIZATION REPORT NUMBER

ABC-DOT-213-001

Block No. 9 -- PERFORMING ORGANIZATION NAME AND ADDRESS

ABC Laboratories
405 Main Street
Detroit, MI 48070

14. REPORTS....Continued

Block No. 10 -- WORK UNIT NUMBER

Leave blank

Block No. 11 -- CONTRACT OR GRANT NUMBER

DTNH22-9X-D-12345

Block No. 12 -- SPONSORING AGENCY NAME AND ADDRESS

U.S. Department of Transportation
National Highway Traffic Safety Administration
Office of Vehicle Safety Compliance (NSA-30)
400 Seventh Street, SW, Room 6115
Washington, DC 20590

Block No. 13 -- TYPE OF REPORT AND PERIOD COVERED

Final Test Report
Feb. 15 to Mar. 15, 199X (or 200X)

Block No. 14 -- SPONSORING AGENCY CODE

NSA-30

Block No. 15 -- SUPPLEMENTARY NOTES

Leave blank

Block No. 16 -- ABSTRACT

Compliance tests were conducted on CSC Super Safe child restraint systems in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-213-0X for the determination of FMVSS 213 compliance. Test failures identified were as follows:

None

NOTE: Above wording must be shown with appropriate changes made for a particular compliance test. Any questions should be resolved with the COTR.

14. REPORTS....Continued

Block No. 17 -- KEY WORDS

Compliance Testing
Safety Engineering
FMVSS 213

Block No. 18 -- DISTRIBUTION STATEMENT

Copies of this report are available from--

National Highway Traffic Safety Administration
Technical Reference Division
Room 5108 (NAD-40)
400 Seventh St., SW
Washington, DC 20590
Telephone No.: 202-366-4946

Block No. 19 -- SECURITY CLASSIFICATION OF REPORT

Unclassified

Block No. 20 -- SECURITY CLASSIFICATION OF PAGE

Unclassified

Block No. 21 -- NUMBER OF PAGES

Add appropriate number

Block No. 22 -- PRICE

Leave blank

14.3.4 TABLE OF CONTENTS

Final test report Table of Contents shall include the following:

- Section 1 - Purpose of Compliance Test and Test Procedure
- Section 2 - Compliance Data Summary
- Section 3 - Inspection and Test Data
- Section 4 - Test Equipment List and Calibration Information
- Section 5 - Photographs
- Section 6 - Notice of Test Failure (if applicable)

14. REPORTS....Continued

14.3.5 PURPOSE AND TEST PROCEDURE

Final test reports shall include the following:

PURPOSE

The purpose of the test was to determine if the production child restraint systems supplied by the National Highway Traffic Safety Administration met the requirements of Federal Motor Vehicle Safety Standard (FMVSS) No. 213 - Child Restraint Systems.

TEST PROCEDURE

The "ABC Laboratories Test Procedure for FMVSS 213," submitted and approved by the Office of Vehicle Safety Compliance, National Highway Traffic Safety Administration, contains the specific procedures used to conduct this test. This procedure shall not be interpreted to be in conflict with any portion of FMVSS 213 and amendments in effect as noted in the applicable contract.

15. DATA SHEETS

One sample of each Compliance Data Sheet is included in this section. More than one copy of a Data Sheet may be needed for a complete compliance test series.

Record test data in standard engineering units, determine compliance, and record PASS, FAIL, NA (not applicable), or SEE REMARKS in the spaces provided. Any noncompliance should be explained under REMARKS.

15. DATA SHEETS....Continued:

DATA SHEET 1
INSPECTION AND TEST DATA
FMVSS 213 - CHILD RESTRAINT SYSTEMS

Report No. _____

CHILD RESTRAINT SYSTEM IDENTIFICATION

Manufacturer:

Name: _____

Address: _____

Model No.: _____

Group No.: _____

1. Item Code: _____
Date of Manufacture _____
Sled Test No. _____

2. Item Code: _____
Date of Manufacture _____
Sled Test No. _____

3. Item Code: _____
Date of Manufacture _____
Sled Test No. _____

4. Item Code: _____
Date of Manufacture _____
Sled Test No. _____

5. Item Code: _____
Date of Manufacture _____
Sled Test No. _____

6. Item Code: _____
Date of Manufacture _____
Sled Test No. _____

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 2
COMPLIANCE TEST DATA – FMVSS 213

LABELING
(FMVSS 213, S5.5)

Report No. _____ Item Code _____
Date of Test _____

Pass/Fail

S5.5.1 Each add-on child restraint system shall be permanently labeled with the information specified in S5.5.2 (a) through (m).

S5.5.2 The information specified in paragraphs (a) through (m) of this section shall be stated in the English language and lettered in letters and numbers that are not smaller than 10-point type and are on a contrasting background.

The following information is included:

- (a) Model name or number _____
- (b) Name of manufacturer or responsible distributor _____
- (c) Month and year of manufacture, included in the statement "Manufactured in _____." _____
- (d) Place (city and state, or foreign country) of manufacture or principle offices of the distributor. _____
- (e) The statement: "This child restraint system conforms to all applicable Federal Motor Vehicle Safety Standards." _____

REMARKS:

Technician: _____ Date: _____

15. DATA SHEETS....Continued:

- (f) One of the following statements, inserting the manufacturer's recommendations for the maximum weight and height of children who can safely occupy the system: _____

(i) THIS INFANT RESTRAINT IS DESIGNED FOR USE BY CHILDREN WHO WEIGH _____ POUNDS (MASS _____ KG) OR LESS AND WHOSE HEIGHT IS _____ INCHES (_____ MM) OR LESS; or

(ii) THIS CHILD RESTRAINT IS DESIGNED FOR USE ONLY BY CHILDREN WHO WEIGH BETWEEN _____ AND _____ POUNDS (MASS BETWEEN _____ AND _____ KG) AND WHOSE HEIGHT IS _____ INCHES (_____ MM) OR LESS AND WHO ARE CAPABLE OF SITTING UPRIGHT ALONE; or

(iii) THIS CHILD RESTRAINT IS DESIGNED FOR USE ONLY BY CHILDREN WHO WEIGH BETWEEN _____ AND _____ POUNDS (MASS BETWEEN _____ AND _____ KG) AND ARE BETWEEN _____ AND _____ INCHES (_____ AND _____ MM) IN HEIGHT.

- (g) The following statement, inserting the location of the manufacturer's installation instruction booklet or sheet on the restraint. _____

WARNING! FAILURE TO FOLLOW EACH OF THE FOLLOWING INSTRUCTIONS CAN RESULT IN YOUR CHILD STRIKING THE VEHICLE'S INTERIOR DURING A SUDDEN STOP OR CRASH. SECURE THIS CHILD RESTRAINT WITH A VEHICLE BELT AS SPECIFIED IN THE MANUFACTURER'S INSTRUCTIONS LOCATED _____.

- (h) In the case of each child restraint system that has belts designed to restrain children using them, the statement: _____

SNUGLY ADJUST THE BELTS PROVIDED WITH THIS CHILD RESTRAINT AROUND YOUR CHILD.

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

- (i)(1) Except for a booster seat which is recommended for use with both a vehicle's Type I and Type II seat belt assembly, and except for a backless child restraint system manufactured before September 1, 1994, one of the following statements, as appropriate:

(i) WARNING! USE ONLY THE VEHICLE'S LAP AND SHOULDER BELT SYSTEM WHEN RESTRAINING THE CHILD IN THIS BOOSTER SEAT; or _____

(ii) WARNING! USE ONLY THE VEHICLE'S LAP BELT SYSTEM, OR THE LAP BELT PART OF A LAP/SHOULDER BELT SYSTEM WITH THE SHOULDER BELT PLACED BEHIND THE CHILD, WHEN RESTRAINING THE CHILD IN THIS SEAT. _____

- (2) For a booster seat which is recommended for use with both a vehicle's Type I and Type II seat belt assemblies, the following statement: _____

WARNING! USE ONLY THE VEHICLE'S LAP BELT SYSTEM, OR THE LAP BELT PART OF A LAP/SHOULDER BELT SYSTEM WITH THE SHOULDER BELT PLACED BEHIND THE CHILD, WHEN RESTRAINING THE CHILD WITH THE (*insert description of the system element provided to restrain forward movement of the child's torso when used with a lap belt (e.g., shield),*) AND ONLY THE VEHICLE'S LAP AND SHOULDER BELT SYSTEM WHEN USING THIS BOOSTER WITHOUT THE (*insert above description*).

- (j) In the case of each child restraint system equipped with an anchorage strap, the statement: _____

SECURE THE TOP ANCHORAGE STRAP PROVIDED WITH THIS CHILD RESTRAINT AS SPECIFIED IN THE MANUFACTURER'S INSTRUCTIONS.

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

- (k)(1) In the case of each rear-facing child restraint system that is designed for infants only, the following statements:

(i) "PLACE THIS INFANT RESTRAINT IN A REAR-FACING POSITION WHEN USING IT IN THE VEHICLE"

- (2) In the case of a child restraint system that is designed to be used rearward-facing for infants and forward-facing for older children, the following statements:

(i) "PLACE THIS CHILD RESTRAINT IN A REAR-FACING POSITION WHEN USING IT WITH AN INFANT WEIGHING LESS THAN (Insert a recommended weight that is not less than 10 kg (22 pounds))."

- (4) In the case of each child restraint system that can be used in a rear-facing position and is manufactured on or after May 27, 1997, a label that conforms to Figure 10 and to the requirements of S5.5.2(k)(4)(i) through S5.5.2(k)(4)(iii) of FMVSS 213 is required. The label shall be permanently affixed to the outer surface of the cushion or padding in or adjacent to the area where a child's head would rest, so that the label is plainly visible and easily readable. The text included in figure 10 reads:

"WARNING. DO NOT place rear-facing child seat on front seat with air bag. DEATH OR SERIOUS INJURY can occur. The back seat is the safest place for children 12 and under."

(i) The heading area shall be yellow with the word "WARNING" and the alert symbol in black.

(ii) The message area shall be white with black text. The message area shall be no less than 30 cm². (4.65 in²)

(iii) The pictogram shall be black with a red circle and slash on a white background. The pictogram shall be no less than 30 mm. (1.18 in.) in diameter.

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

- (l) An installation diagram showing the child restraint system installed in the right front outboard seating position equipped with a continuous-loop lap/shoulder belt and in the center rear seating position as specified in the manufacturer's instructions.

- (m) The following statement, inserting an address and telephone number:

"Child restraints could be recalled for safety reasons. You must register this restraint to be reached in a recall. Send your name, address and the restraint's model number and manufacturing date to (*insert address*) or call (*insert telephone number*). For recall information, call the U. S. Government's Auto Safety Hotline at 1-800-424-9393 (202-366-0123 in D.C. area)."

- (n) Child restraint systems, other than belt-positioning seats, harnesses, and backless child restraint systems, may be certified as complying with the provisions of S8. Child restraints that are so certified shall be labeled with the statement:

"This Restraint is Certified for Use in Motor Vehicles and Aircraft."

Belt-positioning seats, harnesses, and backless child restraint systems shall be labeled with the statement:

"This Restraint is Not Certified for Use in Aircraft."

The statement required by this paragraph shall be in red lettering, and shall be placed after the certification statement required by S5.5.2(e).

S5.5.3 The information specified in FMVSS 213, S5.5.2 (g)-(k), shall be located on the add-on child restraint system so that it is visible when the system is installed as specified in S5.6.1.

- (O) Labels may be seen in photographs presented in Appendix C.

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 3
COMPLIANCE TEST DATA: FMVSS 213

INSTALLATION INSTRUCTIONS
(FMVSS 213, S5.6)

Report No.: _____ Item Code: _____
Date of Test: _____

**PASS/
FAIL**

S5.6.1 Each add-on child restraint system shall be accompanied by printed installation instructions in the English language that provide a step-by-step procedure, including diagrams, for installing the system in motor vehicles, securing the system in the vehicles, positioning a child in the system, and adjusting the system to fit the child.

S5.6.1.1 In a vehicle with rear designated seating positions, the instructions shall alert vehicle owners that, according to accident statistics, children are safer when properly restrained in the rear seating positions rather than in the front seating positions.

S5.6.1.2 The instructions specify in general terms the types of vehicles, the types of seating positions, and the types of vehicle safety belts with which the add-on child restraint system can or cannot be used.

S5.6.1.3 The instructions shall explain the primary consequences of not following the warnings required to be labeled on the child restraint system in accordance with S5.5.2 (g) through (k).

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

S5.6.1.4 The instructions for each car bed shall explain that the car bed should position in such a way that the child's head is near the center of the vehicle.

S5.6.1.5 The instructions shall state that add-on child restraint systems should be securely belted to the vehicle, even when they are not occupied, since in a crash an unsecured child restraint system may injure other occupants.

S5.6.1.6 Each add-on child restraint system shall have a location on the restraint for storing the manufacturer's instructions.

S5.6.1.7 The instructions shall include the following statement, inserting an address and telephone number: "Child restraints could be recalled for safety reasons. You must register this restraint to be reached in a recall. Send your name, address and the restraint's model number and manufacturing date to *(insert address)* or call *(insert telephone number)*. For recall information, call the U.S. Government's Auto Safety Hotline at 1-800-424-9393 (202-366-0123 in D.C. area)."

S5.6.1.8 In the case of each child restraint system that can be used in a position so that it is facing the rear of the vehicle, the instructions shall provide a warning against using rear-facing restraints at seating positions equipped with airbags, and shall explain the reasons for, and consequences of not following the warning. The instructions shall also include a statement that owners of vehicles with front passenger side airbags should refer to their owner's manual for child restraint installation instructions.

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

S5.6.1.9 In the case of each rear-facing child restraint system that has a means for repositioning the seating surface of the system that allows the system's occupant to move from a reclined to an upright position during testing, the instructions shall include a warning against impeding the ability of the restraint to change adjustment position.

(a) For instructions for a booster seat that is recommended for use with either a vehicle's Type I and Type II seat belt assembly, one of the following statements, as appropriate, and the reasons for the statement:

(i) WARNING! USE ONLY THE VEHICLE'S LAP AND SHOULDER BELT SYSTEM WHEN RESTRAINING THE CHILD IN THIS BOOSTER SEAT; or

(ii) WARNING! USE ONLY THE VEHICLE'S LAP BELT SYSTEM, OR THE LAP BELT PART OF A LAP/ SHOULDER BELT SYSTEM WITH THE SHOULDER BELT PLACED BEHIND THE CHILD, WHEN RESTRAINING THE CHILD IN THIS SEAT.

(b)(i) Except as provided in S5.6.1.10(b)(ii), the instructions for a booster seat that is recommended for use with both a vehicle's Type I and Type II seat belt assemblies shall include the following statement and the reasons therefore:
 WARNING! USE ONLY THE VEHICLE'S LAP BELT SYSTEM, OR THE LAP BELT PART OF A LAP/SHOULDER BELT SYSTEM WITH THE SHOULDER BELT PLACED BEHIND THE CHILD, WHEN RESTRAINING THE CHILD WITH THE *(insert description of the system element provided to restrain forward movement of the child's torso when used with a lap belt (e.g., shield),)* AND ONLY THE VEHICLE'S LAP AND SHOULDER BELT SYSTEM WHEN USING THIS BOOSTER WITHOUT THE (*insert above description*).

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

- (b)(ii) A booster seat which is recommended for use with both a vehicle's Type I and Type II seat belt assemblies is not subject to S5.6.1.10(b)(i) if, when the booster is used with the shield or similar component, the booster will cause the shoulder belt to be located in a position other than in front of the child when the booster is installed. However, the instructions for such a booster shall include a warning to use the booster with the vehicle's lap and shoulder belt system when using the booster without a shield.

- (c) The instructions for belt-positioning seats shall include the statement:

"This restraint is not certified for aircraft use", and the reasons for this statement.

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 4
COMPLIANCE TEST DATA: FMVSS 213

REGISTRATION FORM
(FMVSS 213, S5.8)

Report No.: _____ Item Code: _____
Date of Test: _____

**PASS/
FAIL**

S5.8 Information requirements - registration form.

- (a) Each child restraint system, except a factory-installed built-in restraint system, shall have a registration form attached to any surface of the restraint that contacts the dummy when the dummy is positioned in the system in accordance with S6.1.2 of Standard 213. _____
- (b) Each form shall:
- (1) Consist of a postcard that is attached at a perforation to an informational card; _____
 - (2) Conform in size, content and format to Figures 9a and 9b of this section; and _____
 - (3) Have a thickness of at least 0.178 mm.(0.007 in.) and not more than 0.241 mm.(0.0095 in.) _____
- (c) Each postcard shall provide the model name or number and date of manufacture (month, year) of the child restraint system to which the form is attached, shall contain space for the purchaser to record his or her name and mailing address, shall be addressed to the manufacturer, and shall be postage paid. No other information shall appear on the postcard, except identifying information that distinguishes a particular child restraint system from other systems of that model name or number may be preprinted in the shaded area of the postcard, as shown in Figure 9a of FMVSS 213. _____

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 5
COMPLIANCE TEST DATA: FMVSS 213

INSTALLATION
(FMVSS 213, S5.3)

Report No.: _____ Item Code: _____
Date of Test: _____

**PASS/
FAIL**

S5.3.1 No attachment to vehicle seat cushion or seat back, nor insert between them.

S5.3.2 Secured by means of (check one)

_____ Lap belt only

_____ Lap belt and tether

or

_____ Lap/shoulder combination

S5.3.3 Lateral installation for car beds.

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 6
COMPLIANCE TEST DATA: FMVSS 213

MINIMUM HEAD SUPPORT SURFACE
(FMVSS 213, S5.2.1)

Report No.: _____ Item Code: _____
Date of Test: _____

S5.2.1.2 The child restraint system is low enough to be exempt from this requirement.

(YES, NO)

S5.2.1.1

BACK SUPPORT HEIGHT

Maximum Child Weight kg. (lbs.)	Required Minimum Height cm. (in.)	Measured Height cm. (in.)	Pass/ Fail

BACK SUPPORT WIDTH

Required Minimum Width cm. (in.)	Measured Width cm. (in.)	Side Wing Depth cm. (in.)	Pass/ Fail

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 7
COMPLIANCE TEST DATA: FMVSS 213

TORSO IMPACT PROTECTION
(FMVSS 213, S5.2.2)

Report No.: _____ Item Code: _____
Date of Test: _____

S5.2.2.1

Test	Compliance Requirement	Test Result	Pass / Fail
Back Support Surface	Flat or concave		
	Area 548 sq. cm. (85 sq. in.)	sq. cm. (sq. in.)	
Side Support Surface	Flat or concave		
Max. weight 9 kg (20 lbs.)	Area 155 sq. cm. (24 sq. in.)	sq. cm. (sq. in.)	
Max. weight < 9 kg (20 lbs.)	Area 310 sq. cm. (48 sq. in.)	sq. cm. (sq. in.)	(1)
Forward Restraining Surface			
Horiz. Cross Section	Flat or concave		
Vertical Longitudinal	Flat or convex		
Cross Section	Radius of curvature 5 cm. (2 in.)		

Yes/No

Pass/Deferred

S5.2.2.2 Forward Fixed or Movable Surface

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 8
COMPLIANCE TEST DATA: FMVSS 213

PROTRUSION LIMITATION
(FMVSS 213, S5.2.4)

Report No.: _____ Item Code: _____
Date of Test: _____

Test	Compliance Requirement mm. (in.)	Test Result mm. (in.)	Pass/ Fail
Height	9.53 mm. (3/8 in.)		
Edge Radius	6.35 mm. (1/4 in.)		

REMARKS:

Technician: _____ Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 9
COMPLIANCE TEST DATA: FMVSS 213

DYNAMIC IMPACT TEST CONDITIONS
(FMVSS 213, S6.1)

Report No.: _____ Sled Test: _____
Date of Test: _____ Item Code: _____

Laboratory Ambient Conditions During Testing

Temperature Range _____ to _____ Degrees C (F)
Relative Humidity _____ % to _____ %

Test Configuration (I or II) _____

Nominal velocity (km/h) _____

Dummy Used _____ S/N: _____

Child Restraint System

Installation mode _____

Adjustment mode _____

"Misuse" mode _____ N/A

Test Results

Actual velocity _____ m/s (ft/s)
_____ km/h (mph)

Integrated area of sled acceleration
deviation below the lower severity
boundary m/s (ft/s)

_____ m/s (ft/s)

Limits:

Configuration I - 0.13 m/s (0.44 ft/s)

Configuration II - 0.09 m/s (0.29 ft/s)

Include pre- and post-test photographs and acceleration-time history plot.

REMARKS:

Pretest and posttest photographs are presented in Appendix C.

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 9
COMPLIANCE TEST DATA: FMVSS 213
DYNAMIC IMPACT TEST

Report No.: _____
Date of Test: _____

Sled Test No.: _____
Item Code: _____

"SLED PULSE"

FMVSS 213 30 MPH PULSE ENVELOPE

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 10
COMPLIANCE TEST DATA: FMVSS 213

BELT RESTRAINT
(FMVSS 213, S5.4.3)

Report No.: _____
Date of Test: _____

Sled Test No.: _____
Item Code: _____

S5.4.3.1 Snug Fit of Belts

EXTRA WEBBING

Dummy	Each Shoulder Belt cm. (in.)	Each Lap Belt Side cm. (in.)	Crotch Belt cm. (in.)

S5.4.3.2 Direct Restraint Belts

	YES/NO
(1) Belt/dummy contact for restraint	_____
(2) Rigid structure behind dummy	_____
(3) Belt/child restraint slip possible	_____

NOTE: If all "YES", restraint fails

S5.4.3.3 Seating System Belts and/or Shields

(1) Upper torso	_____
(2) Lower torso	_____
(3) Crotch restraint	_____

S5.4.3.4 Child Harness Belts

(1) Upper torso	_____
(2) Lower torso	_____
(3) Prevent standing	_____

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 11
COMPLIANCE TEST DATA: FMVSS 213

BUCKLE RELEASE
(FMVSS 213, S5.4.3.5, S6.2)

Report No.: _____
Date of Test: _____

Sled Test No.: N _____
Item Code: _____

Test	Compliance Requirement	Test Result	Pass / Fail
Buckle Minimum Surface Area	Area 3.9 cm. ² (0.6 in. ²)	cm. ² (in. ²)	
Pre - Impact Release Force	Force range : 40 to 62 N (9 to 14 lbs.)	N (lbs.)	
Buckle Integrity	Not release during test		
Post - Impact Release Force	Force range: ≤ 71 N (16 lbs.)	N (lbs.)	

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 12
COMPLIANCE TEST DATA: FMVSS 213

RESTRAINT SYSTEM INTEGRITY
(FMVSS 213, S5.1.1)

Report No.: _____
Date of Test: _____

Sled Test No.: N _____
Item Code: _____

Test	Compliance Requirement	Test Result	Pass / Fail
Structural Integrity	No complete separation		
	No partial separation with exposed edge radius < 9.53 mm. (1/4 in.)		
	No partial separation with protrusions > 6.35 mm. (3/8 in.)		
Adjustment Position	No change		
Back Surface / Seating Surface Angle	Not < 45 degrees		

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 13
COMPLIANCE TEST DATA: FMVSS 213

INJURY CRITERIA
(FMVSS 213, S5.1.2)

Report No.: _____
Date of Test: _____

Sled Test No.: _____
Item Code: _____

Test	Compliance Requirement	Test Result	Pass / Fail
Head Injury Criterion	≤ 1000		
Chest Injury Criterion	Cumulative duration over 60 g \leq 3 ms	Peak g = _____ Duration exceeding 60 g = _____	

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 14
COMPLIANCE TEST DATA: FMVSS 213

OCCUPANT EXCURSION
(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1 (c))

Report No.: _____

Sled Test No. : _____

Date of Test: _____

Item Code: _____

FORWARD-FACING RESTRAINTS

Test	Compliance Requirement	Test Result	Pass / Fail
Torso Retention (FMVSS 213, S5.1.3.1)	Retain within system		
Head Excursion (FMVSS 213, S5.1.3.1)	≤ 81.3 cm. (32 in.)	cm (in.)	
Knee Target Excursion (FMVSS 213, S5.1.3.1)	≤ 91.5 cm. (36 in.)	cm.(in.)	
Head - Torso Angle (FMVSS 213, S5.2.1.1 (c))	Rearward change \leq 45 degrees	deg.	

REAR-FACING RESTRAINTS

Test	Compliance Requirement	Test Result	Pass / Fail
Torso Retention (FMVSS 213, S5.1.3.2)	Retain within system		
Head Target Excursion (FMVSS 213, S5.1.3.2)	Not beyond restraint's top and forward edge		
Back Support Angle (FMVSS 213, S5.1.4)	≤ 70 degrees	deg.	
Head - Torso Angle (FMVSS 213 S5.2.1.1 (c))	Rearward change \leq 45 degrees	deg.	

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 15
COMPLIANCE TEST DATA: FMVSS 213

OCCUPANT EXCURSION
(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1 (c))

Report No.: _____
Date of Test: _____

Sled Test No.: _____
Item Code: _____

CAR BED RESTRAINTS

Test	Compliance Requirement	Test Result	Pass / Fail
Head - Torso Retention (FMVSS 213, S5.1.3.3)	Retain within confines of system		

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 16
COMPLIANCE TEST DATA: FMVSS 213

AIRCRAFT PASSENGER SEAT INVERSION TEST
CONDITIONS AND RESULTS
(FMVSS 213, S8.2, S8.2.5, S8.2.6)

Report No.: _____ Item Code: _____
Date of Test: _____

**PASS/
FAIL**

S8.1 Each child restraint system manufactured for use in aircraft shall be accompanied by printed instructions in English that provide a step-by-step procedure, including diagrams, for installing the system in aircraft passenger seats, securing a child in the system when it is installed in aircraft, and adjusting the system to fit the child.

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 17
COMPLIANCE TEST DATA: FMVSS 213

AIRCRAFT PASSENGER SEAT INVERSION TEST
CONDITIONS AND RESULTS
(FMVSS 213, S8.2, S8.2.5, S8.2.6)

Report No.: _____ Sled Test No.: _____
 Date of Test: _____ Item Code: _____
 Date of Manufacture _____

Laboratory Ambient Conditions During Testing Temperature Range

Temperature Range _____ to _____ Degrees

Relative Humidity _____ % to _____ %

INVERSION TEST

Dummy Used _____

Child Restraint System _____

Installation mode _____

Adjustment mode _____

ROTATION ABOUT Y-AXIS (FORWARD)

Test	Compliance Requirement	Test Result	Pass / Fail
Dummy Retention (FMVSS 213, S8.2.5)	Retained within system		
Child Restraint Retention (FMVSS 213, S8.2.5)	Retained within aircraft seat		

ROTATION ABOUT X-AXIS (LATERAL)

Test	Compliance Requirement	Test Result	Pass / Fail
Dummy Retention (FMVSS 213, S8.2.6)	Retained within system		
Child Restraint Retention (FMVSS 213, S8.2.6)	Retained within aircraft seat		

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 18
FLAMMABILITY TEST (S213-S5.7/S302-S4.3)

Report No.: _____

Test Date: _____

Item Code: _____

Laboratory Ambient Conditions During Testing –

Temperature Range: _____ to _____ °C (°F)

Relative Humidity Range: _____ to _____ %

Type of Material: _____

Function: _____

Sample Dimensions: L= _____ cm. (in.), W= _____ cm. (in.), H= _____ cm. (in.)

Burn Direction: _____

Burn Distance: _____ cm. (in.)

Burn Time: _____ seconds

TEST	COMPLIANCE REQUIREMENT	TEST RESULTS	PASS	FAIL
Burn Rate	≤ 10.2 cm/min. (4 in./min.)			
Flame-Front Transmission Rate	≤ 10.2 cm/min. (4 in./min.)			
Self- Extinguishment	Time < 60 sec. Burn Distance \leq 5.1 cm (2 in.)			

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 19
WEBBING PERFORMANCE TESTS (S213-S5.4.1)

Report No.: _____

Test Date: _____

Item Code: _____

Laboratory Ambient Conditions During Testing:

Temp. Range: _____ to _____ °F (°C); Relative Humidity Range: _____ to _____ %

Webbing Usage On Restraint: _____

TEST	COMPLIANCE REQUIREMENT	TEST RESULT	PASS	FAIL
Non-Degraded Webbing (FMVSS 209, S5.1(b))	This test provides baseline webbing breaking strength.	1. _____ 2. _____ 3. _____ Median ____	N/A (Provides baseline strength)	N/A (Provides baseline strength)
Resistance to Abrasion (FMVSS 209, S4.2(d), S5.1(d)) Abrasion cycles performed _____ (2500 required)	Median breaking strength ≥ _____ N (lb) (75% of median baseline strength)	1. _____ 2. _____ 3. _____ Median ____		
Resistance to Buckle Abrasion (FMVSS 209, S5.3(c)) Abrasion cycles performed _____ (2500 required)	Median breaking strength ≥ _____ N (lb) (75% of median baseline strength)	1. _____ 2. _____ 3. _____ Median ____		

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

TEST	COMPLIANCE REQUIREMENT	TEST RESULT	PASS	FAIL
Resistance to Light (FMVSS 209, S4.2(e), S5.1(e)) Exposure Time _____ (100 hours required)	Median breaking strength ≥ _____ N (lb) (60% of median baseline strength)	1. _____ 2. _____ 3. _____ Median ____		
	Color retention ≥ No. 2 on the Geometric Gray Scale	1. _____ 2. _____ 3. _____		
Resistance to Micro-Organisms (FMVSS 209, S4.2(f), S5.1(f)) Burial Duration _____ (2 weeks required)	Median breaking strength ≥ _____ N (lb) (85% of median baseline strength)	1. _____ 2. _____ 3. _____ Median ____		
Width Requirement (FMVSS 209, S5.4.1(c), S5.4.1.1))	Width ≥ 3.8 cm (1.5 in)	1. _____ 2. _____ 3. _____		

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 20
 BELT BUCKLE AND ADJUSTMENT HARDWARE PERFORMANCE TESTS
 (S213-S5.4.2/S209-S4.3)

Report No.: _____

Test Date: _____

Item Code: _____

Laboratory Ambient Conditions During Testing:

Temp. Range: _____ to _____ °C (°F); Relative Humidity Range: _____ to _____ %

TEST	COMPLIANCE REQUIREMENT	TEST RESULT	PASS	FAIL
Corrosion Resistance (FMVSS 209, S4.3(a)(2)) Exposure time _____ (24 hours required) Drying time _____ (1 hour required)	No Corrosion	1. _____ 2. _____ 3. _____		
Temperature Resistance (FMVSS 209, S4.3(b)) Exposure time _____ (24 hours required) Exposure time _____ (24 hours required)	No functional deterioration	1. _____ 2. _____ 3. _____		
Buckle Release Access (FMVSS 209, S4.3(d)(2))				
Pushbuttons	Area 4.5 sq. cm (0.7 sq.in.)			
	Linear dimensions			
Lever Release	Cylinder insertion			
Other	Two-finger access			

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

TEST	COMPLIANCE REQUIREMENT	TEST RESULT	PASS	FAIL
Adjustment Force (FMVSS 209, S4.3(e)) Conditioning cycles performed _____ (10 required)	Force \leq 11 lb. (49 N)	1. _____ 2. _____ 3. _____		
Tilt-Lock Adjustment (FMVSS 209, S4.3(f))	Lock angle \geq 30 degrees	1. _____ 2. _____ 3. _____		
Buckle Latch (FMVSS 209, S4.3(g)) Conditioning cycles performed _____ (200 required)	No functional deterioration	1. _____ 2. _____ 3. _____		
Metal-to-Metal Buckles	Partial-engagement separation force \leq 5 lb. (22 N)	1. _____ 2. _____ 3. _____		

REMARKS:

Technician: _____

Date: _____

15. DATA SHEETS....Continued:

DATA SHEET 21
ENERGY ABSORBING MATERIALS PERFORMANCE TESTS
(S213-S5.2.3 & S6.3)

Report No.: _____

Test Date: _____

Item Code: _____

Laboratory Ambient Conditions During Testing:

Temp. Range: _____ to _____ °C (°F); Relative Humidity Range: _____ to _____ %

S6.3 Compression-Deflection Resistance (25% compression)

BASE MATERIAL TYPE	TEST PROCEDURE USED	NORMALIZED LOAD VALUE kg./sq. cm. (lb./sq. in.)

REMARKS:

Technician: _____

Date: _____

16. FORMS

LABORATORY NOTICE OF TEST FAILURE TO OVSC

FMVSS 213

TEST DATE: _____

LABORATORY: _____

CONTRACT NO.: _____; DELV. ORDER NO.: _____

LABORATORY PROJECT ENGINEER'S NAME: _____

TEST SPECIMEN DESCRIPTION –

MANUFACTURER: _____

MODEL: _____

PART NO.: _____

TEST FAILURE DESCRIPTION: _____

FMVSS REQUIREMENT, PARAGRAPH § ____ : _____

NOTIFICATION TO NHTSA (COTR): _____

DATE: _____ BY: _____

REMARKS:

16. FORMS....Continued:

MONTHLY TEST STATUS REPORT
FMVSS 213
DATE OF REPORT: _____

GROUP NO.	MANUFACTURER AND BRAND NAME	TEST START DATE	TEST COMPLETE DATE	PASS/ FAIL	DATE FINAL REPORT SUBMITTED
001					
002					
003					
004					
005					
006					
007					
008					
009					
010					
011					
012					
013					
014					
015					
016					
017					
018					
019					
020					
021					
022					
023					
024					

16. FORMS....Continued:

MONTHLY INVENTORY STATUS REPORT
 FMVSS 213
 DATE OF REPORT: _____

GROUP NO.	MANUFACTURER'S NAME	MODEL	NUMBER OF SPECIMENS RECEIVED	CONDITION OF SAMPLE	DATE RECEIVED
001					
002					
003					
004					
005					
006					
007					
008					
009					
010					
011					
012					
013					
014					
015					
016					
017					
018					
019					
020					
021					
022					
023					
024					